

AMENDMENTS TO THE DRAWINGS:

The attached sheets of drawings include changes to Figs. 3 and 4, respectively. These sheets replace the original sheets of Figs. 3 and 4. In Fig. 3, the numerals 140 and 80 have been changed to 140KV and 80KV, respectively. In Fig. 4, previously omitted element 400 has been added.

Attachment: Replacement Sheets.

REMARKS

In response to the Office Action dated October 17, 2003, Applicants respectfully request reconsideration based on the above claim amendment and the following remarks. Applicants respectfully submit that the claims as presented are in condition for allowance.

Claim 23 has been canceled and Claims 1, 8, 10, 19-20, 24, 27 and 29 have been amended, leaving claims 1-22 and 24-29 for consideration upon entry of the present amendment. Support for the amendment can be found the entire specification, for example, paragraphs 22-24 of the Application. Further, the specification and drawings have been amended to correct informalities.

Drawing Objections:

The drawings were objected to as failing to comply with 37 CFR 1.84 (p)(5) because they did not include the following reference sign mentioned in the description: 400. FIG. 4 has been amended to insert the reference sign 400.

The drawings were further objected to as failing to comply with 37 CFR 1.84 (p)(5) because they include the following reference not mentioned in the description: 300. The description: "Using the exemplary waveform depicted in FIG. 3" in line 7 of paragraph [0020] has been amended to recite the description: "Using the exemplary waveform 300 depicted in FIG. 3".

FIG. 3 was objected to because the numerals 140 and 80 cause confusions. The numerals 140 and 80 have been amended to recite the numbers 140KV and 80KV, as suggested by the Examiner.

Withdrawal of the drawing objections is respectfully requested.

Specification Objections:

The disclosure was objected to because of informalities.

The paragraphs [0015] and [0024] have been amended to correct the informalities, as suggested by the Examiner.

Further, the paragraphs [0028] and [0029] replaced by the preliminary amendment on September 23, 2002 have been reinstated, as suggested by the Examiner.

Withdrawal of the specification Objections is respectfully requested.

Claim Objections:

Claims 27 and 29 were objected to because of informalities.

The limitation “execution by the processing circuit for” in Claims 27 and 29 has been amended to recite the limitation “executing a method for plaque characterization by the processing circuit, the method comprising”.

Withdrawal of the claim objections is respectfully requested.

Claim Rejections Under 35 U.S.C. § 112

Claims 20-26 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Since Claim 23 has been canceled without prejudice, the rejection of Claim 23 is moot.

Claim 20 was rejected because it claims both an apparatus and the method steps of using apparatus. Claim 20 has been rewritten to clearly indicate that Claim 20 recites a system for plaque characterization.

Claim 24 was rejected because the term “different geographic locations” is a relative term, which renders the claim indefinite. Claim 24 has been amended to recite a system for plaque characterization in which an imaging system is remotely located from a processing device.

Claims 21-22 and 24-26 depend from Claim 20, and are believed to be allowable due to their dependencies on Claim 20.

Withdrawal of the claim rejections is respectfully requested.

Claim Rejections Under 35 U.S.C. § 103

Claims 1 and 5

Claims 1 and 5 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa et al., US 6,278,760 B1 (hereinafter “Ogawa”) in view of Tsutsui, US 5,396,530 (hereinafter “Tsutsui”) and Merickel et al., US 4,945,478 (hereinafter “Merickel”) for the reasons stated on pages 5-8 of the Office Action.

As noted by the Examiner, Ogawa fails to teach a method used for plaque characterization. Applicants disagree with the Examiner that Tsutsui teaches a “method for plaque characterization … comprising: obtaining a first set of image data … said first set of image data includes hard tissue and soft tissue calcified plaque data; obtaining a second set of image data … said second x-ray energy level is higher than said first x-ray energy level and said second set of image data contains said hard tissue calcified plaque data; and calculating a third set of image data … wherein said calculating includes subtracting each said second pixel element from said corresponding first pixel element and said third set of image data contains said soft tissue calcified plaque data” as recited in Claim 1. In contrast, the portion of Tsutsui referenced by the Examiner teaches that “if the object is a living body, the concept may be applicable to the separation of a bone, a soft tissue, a projected blood vessel or a calcified tissue.” Determining whether a portion of an object is a bone, a soft tissue, a projected blood vessel or a calcified tissue is not the same as performing “performing plaque characterization” and determining whether a portion of an object is “hard tissue calcified plaque” or “soft tissue calcified plaque” as recited in Claim 1.

Similarly, the Examiner’s reference to Merickel does not cure the deficiency in Ogawa. Merickel is directed to “noninvasive identification and evaluation of atheroscelerosis using multidimensional MRI.” This is not the same as “plaque characterization” performed by “obtaining … data created in response to a first x-ray energy level” and “obtaining data created in response to a second x-ray energy level” as recited in Claim 1. Being able to perform a procedure using MRI technology does not imply that the procedure can be performed using x-ray technology. Further, even if Merickel did apply to x-ray technology, it does not teach “performing plaque characterization” and determining whether a portion of an object is “hard tissue calcified plaque” or “soft tissue calcified plaque” as recited in Claim 1. In contrast, Merickel, in the section referred to by the Examiner, teaches the class types: normal wall, fatty plaque, fibrous plaque and complex plaque with possible calcifications. This is not the same as classifying calcified plaque as “hard tissue calcified plaque” or “soft tissue calcified plaque” as recited in Claim 1.

For at least these reasons, Claim 1 is patentable over Ogawa in view of Tsutsui and Merickel. Because they depend from Claim 1, Claims 2-18 are patentable for at least

the same reasons that Claim 1 is patentable. Claims 20 and 27 contain limitations that are similar to Claim 1 and are patentable over Ogawa in view of Tsutsui and Merickel for the same reasons as Claim 1. Because they depend from Claim 20, Claims 12-22 and 24-26 are patentable for at least the same reasons that Claim 20 is patentable. In addition, because it depends from Claim 27, Claim 28 is patentable for at least the same reasons that Claim 27 is patentable.

Claims 2-4

Claims 2-4 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa, Tsutsui and Merickel, and further in view of Gordon et al., US 5,661,774 (hereinafter “Gordon”) for the reasons stated on pages 6-7 of the Office Action.

Gordon discloses a dual energy baggage scanning assembly, which is distinct from the plaque characterization method of Claim 1. Thus, there is no motivation or suggestion in Gordon to combine Gordon with the combination of Ogawa, Tsutsui and Merickel. Even if Gordon is combined with Ogawa, Tsutsui and Merickel, the combination does not render Claim 2 obvious, because Gordon does not cure the deficiencies of the combination of Ogawa, Tsutsui and Merickel as discussed previously in reference to Claim 1. Therefore, Claim 2 is patentable over the combination of Ogawa, Tsutsui, Merickel and Gordon. For the same reasons advanced with respect to Claim 2, Claims 3 and 4 are also believed to be patentable.

Claims 6 and 7

Claims 6 and 7 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa in view of Tsutsui and Merickel. For at least the reasons described above in reference to Claim 1, Claims 6 and 7 are patentable over Ogawa in view of Tsutsui and Merickel.

Claims 8 and 16-18

Claims 8 and 16-18 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa, Tsutsui and Merickel, and further in view of Brown, US 5,459,769 (hereinafter “Brown”) for the reasons stated on pages 8, 11 and 12 of the Office Action.

Brown does not cure the deficiency of the combination of Ogawa, Tsutsui and Merickel as described above in reference to Claim 1. Accordingly, Claims 8 and 16-18 are believed to be allowable due at least to their dependencies on Claim 1.

Claims 10-15

Claims 10-15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa, Tsutsui and Merickel, and further in view of Keyes et al., US 4,559,557 (hereinafter “Keyes”) for the reasons stated on pages 9-11 of the Office Action.

Keyes does not cure the deficiency of the combination of Ogawa, Tsutsui and Merickel as described above in reference to Claim 1. Accordingly, Claims 10-15 are believed to be allowable due at least to their dependencies on Claim 1.

Claim 19

Claim 19 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pflaum, US 6,324,254 (hereinafter “Pflaum”) for the reasons stated on pages 12-13 of the Office Action.

Pflaum discloses an x-ray device for the pick-up of x-ray images of a vessel or organ that moves substantially rhythmically. Pflaum does not teach a “method for plaque characterization … comprising: obtaining image data created in response to first and second x-ray levels” as recited in Claim 19. Accordingly, Pflaum does not render Claim 19 obvious.

Claim 27

Claim 27 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa, Tsutsui and Merickel, and further in view of Takasawa, US 6,501,827 B1 (hereinafter “Takasawa”) for the reasons stated on pages 13-14 of the Office Action.

Takasawa discloses an examination system suitable for an x-ray photographic system. Takasawa does not cure the deficiencies described above in reference to Claim 1. For at least this reason Claim 27 is patentable over Ogawa, Tsutsui and Merickel, and Takasawa.

Claim 28

Claim 28 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Ogawa, Tsutsui and Merickel, Takasawa and Gordon for the reasons stated on pages 14-15 of the Office Action.

As described above, any of Ogawa, Tsutsui, Merickel and Takasawa does not teach all the limitations of Claim 27. The addition of Gordon, does not cure these deficiencies. Thus, the combination of Ogawa, Tsutsui, Merickel, Takasawa and Gordon does not render Claim 28 obvious.

Claim 29

Claim 29 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pflaum in view of Takasawa for the reasons stated on pages 15-16 of the Office Action.

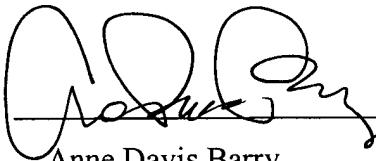
Takasawa does not cure the deficiency in Pflaum as described in reference to Claim 19. As stated in reference to Claim 19, Takasawa does not teach a “method for plaque characterization ... comprising: obtaining image data created in response to first and second x-ray levels” as recited in Claim 29. Thus, the combination of Pflaum and Takasawa does not render Claim 29 obvious.

Conclusion

In view of the foregoing remarks, Applicants submit that the above-identified application is now in condition for allowance. Accordingly, it is respectfully requested that this application be allowed and a Notice of Allowance be issued. If the Examiner believes that a telephone conference with Applicants' attorneys would be advantageous to the disposition of this case, the Examiner is cordially requested to telephone the undersigned.

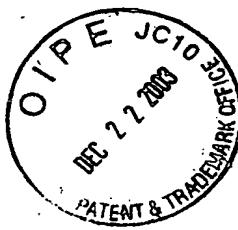
If there are any charges with respect to this response or otherwise, please charge them to Deposit Account 07-0845 maintained by G.E. Medical Systems Global Technology Company, LLC.

Respectfully submitted,

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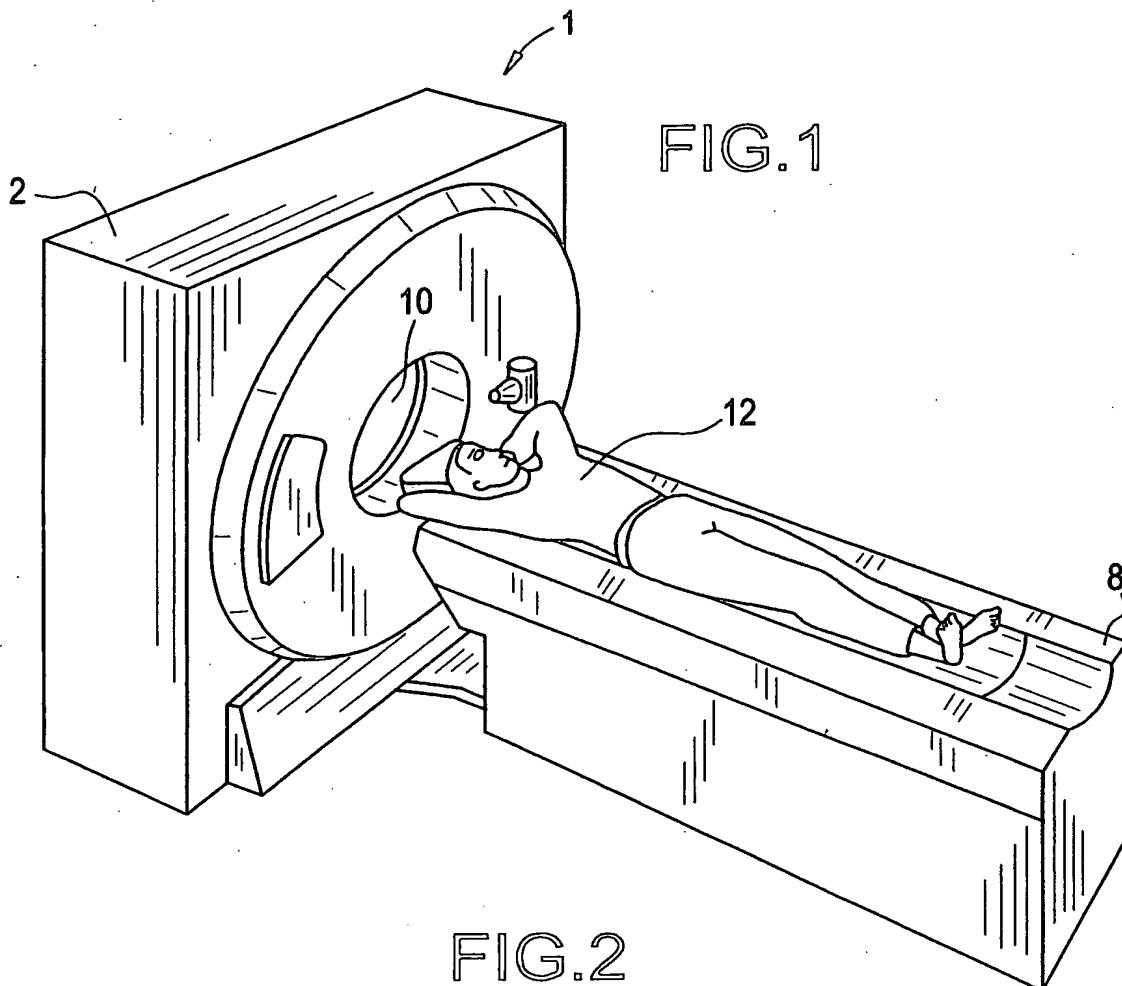
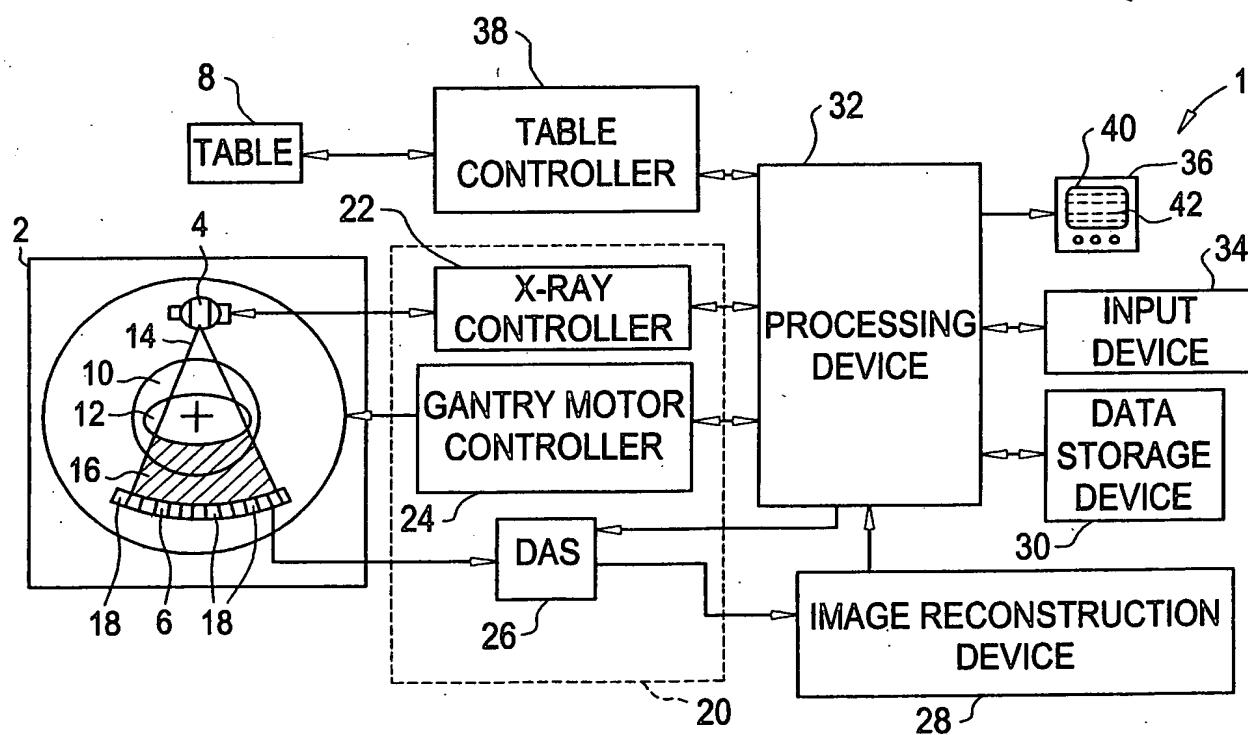


FIG. 1

FIG. 2



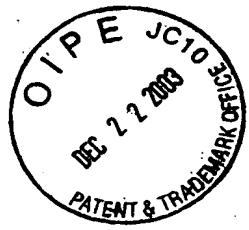


FIG. 5

